

Geographic Analysis and Monitoring Program

Amphibian Research and Monitoring Project

Statement of Problem

There is a growing concern over worldwide declines in amphibian populations. While much research on amphibian declines has centered on mysterious causes, or on causes that directly affect humans (global warming, chemical pollution, ultraviolet- B radiation), most amphibian declines are the result of habitat loss and habitat alteration. Therefore, improving our ability to characterize or model the interactions between environmental variables and amphibian habitat is key toward addressing amphibian conservation.

Objectives

This project is a component of the Amphibian Research and Monitoring

Initiative (ARMI), funded by Congress to DOI agencies for the purposes of: assessing and monitoring the status of amphibians in the U.S., determining causes of population declines, and providing scientific information to managers and policymakers to help with halting or reversing amphibian population declines. Within the USGS, ARMI is associated with annual, earmarked funding for BRD, NMD, and WRD. Investigators for the three disciplines integrate their efforts toward the Program goals (above), with BRD providing the overall coordination for the Program. The primary goal for NMD's role in ARMI is to provide geographic integration across scales, information sources, disciplines, and digital media. Goals for FY03 focus



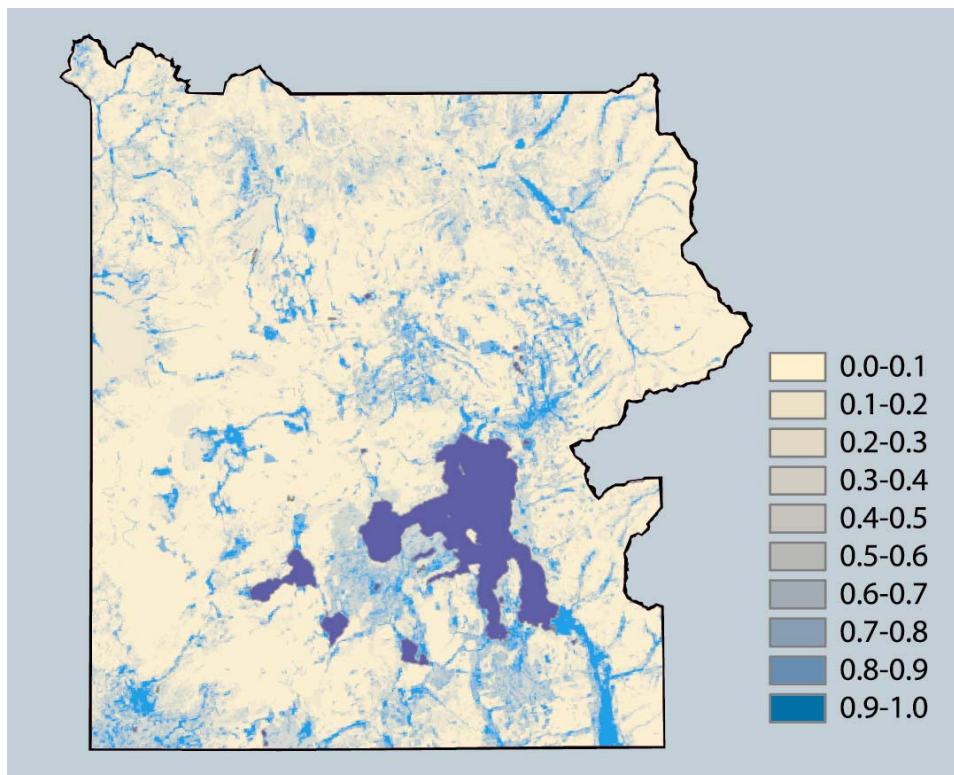
on research activities aimed at improving the ability to characterize or model the interactions between environmental variables and amphibian habitat at multiple scales, providing geographic support (i.e., maps, models, digital data, etc.) to regional ARMI investigators, and developing data visualization methods and tools to assist analyses and communication of results.

Relevance and Impact

The relevance and impacts of this project are that: 1) potential stressors on amphibians may also be factors that affect human health, 2) information on the consequences of land cover/use change on biota are pertinent to the GAM Program goals, and 3) the development of new geospatial methods for assessing environment-wildlife interactions, providing data visualization tools for wildlife biologists, and providing conservation decision support models for land managers and scientists advances the field of applied environmental science.

Strategy and Approach

A number of simultaneous activities address the overall goals of the ARMI Program, which are organized into three tasks: 1) Causes of declines, 2) Nationwide survey of populations, and 3) Scientific information to support management actions. For goal #1, NMD will focus on research activities that attempt to characterize or model relationships between environmental



The availability of amphibian breeding habitat is a key factor in population survival. This map depicts the probability of wetland occurrence in Yellowstone National Park, and was modeled from 1992 Thematic Mapper data and ancillary information on climate, terrain, geology, soils, and vegetation characteristics. This map can be used by field biologists to locate potential breeding sites for the given year, while a set of maps depicting the range in wetland probability from wet years to dry years can provide the foundation for management decision aimed at amphibian conservation.

variables and amphibian habitat at multiple scales. For goal #2, NMD will provide miscellaneous geographic support (i.e., maps, models, digital data, etc.) on a per-request basis to BRD and WRD ARMI investigators. For goal #3, NMD will develop data visualization methods and tools to assist analyses and communication of results.

For More Information

Alisa L. Gallant
605-594-2696
gallant@usgs.gov